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THE CARIBBEAN RACES OF *ANARTIA JATROPHAE* JOHANSSON (LEPIDOPTERA: NYMPHALIDAE)

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While West Indian specimens of *Anartia jatrophae* have for some time been grouped under the collective names *jamaicensis* Moeschler or *saturata* Staudinger, an examination of the extensive material in The American Museum of Natural History made it evident that the populations of the various islands showed characteristic differences, and were racially distinct. The object of this paper is to describe these different races. Descriptions of the forms from the mainland shores of the Caribbean have been included for comparison.

While the South American population of this butterfly is more uniform than that of the West Indies, it shows appreciable local differences. Without more material, however, it would be impossible to work out subspecies.

In general, the Antillean forms are much more heavily suffused with brown than those from the mainland, while seasonal differences are more accentuated. The Greater Antillean population is perhaps of Central American origin, while that of Florida has evidently been derived from Cuba. The St. Croix race, however, approaches the typical form, suggesting some immigration from the Lesser Antilles. No material has been examined from Texas or the Cayman Islands. The former is presumably *luteopicta* Fruhstorfer, while the latter probably represents a distinct subspecies.

A number of genitalic preparations were made, but no significant differences were found between the races. The genitalia are abundantly distinct from those of *A. fatima* Fabricius and *A. lytrea* Godart.

My thanks are due to the authorities of The American Museum of Natural History for access to material and the generous loan of specimens, and, in particular, to Mr.

Wm. P. Comstock who has given me most valuable advice and assistance throughout the preparation of the paper.

Type material of the new subspecies is in The American Museum of Natural History in New York.

Anartia jatrophae jatrophae Johansson

Papilio jatrophae JOHANSSON, 1763, Centuria Insectorum, Amoen. Acad., VI, p. 408.

Papilio jatrophae, LINNAEUS, 1764, Mus. Lud. Ulr., p. 289.

Papilio Nymphalis jatrophae, LINNAEUS, 1767, Syst. Nat., 12th ed., p. 779.

Frons and vertex with long orange hairs; eyes maroon; palpi ivory with brown hairs above; tongue yellowish-brown; antennae dark brown, club with lower surface and distal half of upper surface orange-yellow.

Thorax and abdomen above black, with greenish iridescent hairs; beneath, ivory with irregular tan patches on abdomen. Fore legs ivory; mid and hind legs tan, with posterior surface of femora ivory.

Fore wing above: ground color white with faint violet iridescence, veins black; base heavily dusted with fuscous as far as second transverse line of cell and base of Cu_2 , but extent variable; costal area fuscous, dusted with orange at base; two transverse black lines in cell, frequently with orange between them, another on the discocellular, continued to Cu_2 , a fourth a short distance distad from R to base of Cu_1 , between this and the discocellular line fuscous and frequently orange shading; a broken black discal line followed by a fuscous shade between costa and M_3 ; two fuscous subterminal lines, the inner strongly scalloped, defining a series of lunules between it and the outer line. In area Cu_{1-2} a prominent round black spot surrounded by a faintly indicated orange ring.

Terminal line fuscous, interspersed with white and, at apex, orange scales. Area between terminal and outer subterminal lines orange; area between inner and outer subterminal lines more faintly orange, often white.

Hind wing above similarly marked to fore wing but with lines fainter; some fuscous shading at base and especially along the first anal vein. A faint, wavy, purplish anterior line crossing the cell, and a parallel one shortly beyond. A broken black discal line parallel to the anterior line. Prominent black dots in cells M_{1-2} and Cu_{1-2} , orange rings stronger than on the fore wing spot. Terminal and subterminal areas much as in fore wing. Outer half of discal area tends to be suffused with fuscous.

Fore wing beneath marked much as above, but with veins yellow, not black, fuscous markings replaced by orange-yellow, black transverse lines fainter, edged with orange; postdiscal spot frequently with traces of a blue pupil.

Hind wing beneath: transverse lines red with traces of black, stronger than on upper surface; a red line on the precostal spur. At least anterior postdiscal spot with trace of blue pupil, both spots ringed with red. Postdiscal shading orange; first subterminal line black, orange-bordered, broken; second, red. Terminal and often subterminal area orange-yellow, fringe fuscous and white.

The above description is of material from Georgetown, British Guiana. Specimens from the whole of South America, as well as from Trinidad and the Lesser Antilles, agree fairly well with this form, although those from the Andean region appear to be on the average smaller and darker, while in Peruvian males the outer subterminal line of the hind wing above is orange. Males from the Guiana region have yellower margins than those from most parts of South America. In the West Indies this subspecies ranges from Trinidad as far north as St. Kitts.

The name *jatrophae* has generally been credited in the literature to Linnaeus, but since in 1764 he gives the Johansson citation, it is evident that the latter has prior-

ity. Although Kirby gives 1764 as the date of Boas Johansson's work, in the British Museum catalogue it is listed as 1763. Johansson gives "Americas" as habitat; however, since he cites Merian as a reference, it is probably safe to restrict the type locality to Surinam.

***Anartia jatrophae luteopicta* Fruhstorfer**

Anartia jatrophae luteopicta FRUHSTORFER, 1907, Int. Ent. Zeits. (Guben), I, p. 112.

In general similar to *jatrophae jatrophae*, the chief point of distinction being the very yellow distal margin of the hind wing in the male, especially on the posterior half of the wing. While South American males often have yellow margins, they are equally developed on the fore and hind wings, and there is never a disproportionately developed yellow anal area as in the Central American specimens. The distinction is not, however, hard and fast, many individuals, especially from Panama, being indistinguishable from the South American form.

TYPE LOCALITY.—Honduras. Fifty-seven specimens in The American Museum of Natural History are from Mexico, Guatemala, Honduras, Nicaragua, Costa Rica, and Panama.

***Anartia jatrophae guantanamo*,
new subspecies**

WINTER FORM.—Ground color very light, little more suffused than the mainland forms; both submarginal rows of lunules yellow, but narrower than in *jamaicensis* Moeschler, with dark subterminal lines heavier. (Florida and Bahama specimens are smaller, and in the latter the black markings and orange submarginal suffusion are somewhat reduced.)

SUMMER FORM.—Considerably larger and darker, suffusion brownish. (Suffusion more gray in those from Florida. No summer material available from the Bahamas.)

HOLOTYPE.—Male, San Carlos Estate, Guantanamo, Oriente, Cuba, November 17, 1908.

ALLOTYPE.—Female, 7 km. north of Vinales, Pinar del Rio, Cuba, September 16–22, 1913.

PARATYPES.—Twelve males, nine females, Cuba: Palmarito, July, 1926; 7 km. north of Vinales, September 16–22, 1913; Zaza del Media, September 30, 1913; Pinar del Rio, September 9–24, 1913; Camaguey, 1926; Guane, September 24–26, 1913; Marti, July, 1926; Cristo, Oriente, October 5, 1913; "Cuba, IV, 1926"; Cuba, J. Angus, coll.

NOT INCLUDED IN TYPE SERIES.—Three males, four females, Nassau, Bahamas, February and March; one male, New Providence, Bahamas, November. Nineteen males, five females, Florida: Fort Myers, November; Mayport, October; Venice, July; Canaveral, July; Jupiter, March; Lake Worth; Port Sewall, April, November, December; Miami, August.

The Cuban race differs less from the mainland forms than do those from most of the Antilles. The Bahaman and Floridian forms are provisionally included here, although they appear to differ slightly as described above. Without further material, however, I hesitate to describe these as distinct races. Like most of the West Indian races, *quantanamo* shows appreciable seasonal variation.

Anartia jatrophae jamaicensis Moeschler

Anartia jatrophae var. *jamaicensis* MOESCHLER, 1886, Beitr. Schm.-F. Jam., p. 27.

WINTER FORM.—Small and uniform, with little suffusion. Marginal area bright orange, with rather large lunules, second subterminal line reduced in only a few specimens.

About eighty specimens from various localities in Jamaica, September to March; no summer specimens seen.

Anartia jatrophae saturata Staudinger

Anartia jatrophae var. *saturata* STAUDINGER, 1884, Exot. Tagf., I, p. 105, Pl. XXXIX.

WINTER FORM, MALE.—Of moderate size, with light, little suffused ground color, no marked division of the hind wing into two fields as in *semifusca*. Terminal area as a whole broader, and average size larger than in *semifusca*. Transverse lines not so heavy, and postdiscal spot of fore wings smaller, seldom blue-pupiled. This form bears a much closer resemblance to *jamaicensis* Moeschler but is of larger average size, with the transverse lines not so heavy, the terminal area broader, and the first subterminal line less regular. The range of variation is greater, specimens being found much more suffused than any winter *jamaicensis*.

WINTER FORM, FEMALE.—Much larger, and less contrastingly marked than *semi-*

fusca females, eyespot not blue-pupiled. Rather similar to *jamaicensis* females, but with second subterminal line narrower, and yellow lunules larger. The average size is larger than that of *jamaicensis*.

SUMMER FORM, MALE.—Very large, amount of suffusion variable but heavier than in any other form seen. Terminal area broad, with both subterminal lines very narrow and tending to become obsolete, especially at the apex. Very distinct from most *semifusca*, but occasionally one of the latter approaches very closely to summer *saturata*, although the degree of suffusion is usually less.

SUMMER FORM, FEMALE.—Very large and almost wholly infuscated, often with a yellowish tinge. Lunules of a much paler yellow than in the male. Larger, yellower, and much less contrastingly marked than *semifusca* summer females.

About ninety specimens of both sexes from various localities in Haiti and the Dominican Republic, taken at all seasons.

The type localities for this form are given as "Hayti (Port au Prince)" and "Porto Rico." Since the plate appears to represent a Haitian specimen, I have considered Port au Prince to be the actual type locality. This race is noteworthy for pronounced seasonal differences in coloration.

Anartia jatrophae semifusca, new subspecies

WINTER FORM, MALE.—About the same size as winter males of *intermedia*, but suffusion on outer half of wing very heavy, especially on the hind wing, where it is sharply defined internally. Both rows of lunules deep orange. All dark lines heavier. Postdiscal spot of fore wing large, frequently blue-pupiled, those of hind wings with orange rings. Beneath, on fore wings, outer half not suffused, but on hind wings heavily so. Red markings broad. As compared with *saturata* winter males all the dark lines are heavier, including the subterminal and terminal. The postdiscal spot of the fore wings is larger and often blue-pupiled. The gray suffusion of the wings is heavier than in most winter *saturata*, has less orange intermixture and is much more sharply defined. Beneath, the suffusion is gray instead of yellowish, while the red markings are heavier. The most obvious point of distinction from *saturata* is the much smaller size of the orange lunules in the two submarginal bands.

WINTER FORM, FEMALE.—Distinguished from *intermedia* by the decidedly orange color of both

rows of submarginal lunules on both fore and hind wings. Beneath, the transverse lines of the hind wings are redder, while the rings of the postdiscal spots are definitely red. From winter females of *saturata* it is distinguished by its smaller size, heavier dark markings and reduction of the orange lunules.

SUMMER FORM, MALE.—Similar in size and pattern to winter males, but more suffused, and tends to have the subterminal and terminal lines reduced. The dark suffusion immediately distinguishes it from summer males of *intermedia*. Some specimens have the hind wings completely suffused, resembling the summer form of *saturata*.

SUMMER FORM, FEMALE.—More heavily suffused and somewhat larger than winter females, differing from summer females of *saturata* in the heavier transverse lines, especially the subterminal and terminal, and in the more clearly defined white areas.

HOLOTYPE.—Male, San Juan, Puerto Rico, July 9–12, 1914.

ALLOTYPE.—Female, Mayaguez, Puerto Rico, July 24–29, 1914.

PARATYPES.—Twelve males, eight females, Puerto Rico: San Turce, January 1, 1914; San Tucci, February 3, 1927, August 3 and 7, 1919; Loquillo National Forest, February 13, 1925; Mameyes, February 14, 1925; San Juan, February 3, 8, 10, and 11–14, 1927, July 9–12, 1914; Rio Piedras, February 6, 1927; Aibonito, July 14–17, 1914; Ponce, July 20–22, 1914; Adjuntas, June 8–13, 1915.

Specimens from St. Thomas, of which a

number were examined, appear to be indistinguishable from those from Puerto Rico.

Anartia jatrophae intermedia, new subspecies

WINTER FORM.—Male very similar to typical *jatrophae* (from Guadeloupe) but much smaller than specimens of similar date and with the space between the terminal and outer subterminal lines broader, decidedly orange-yellow, not completely broken up into lunules. There tends to be more orange-yellow between the discocellular and post-discocellular lines. Female smaller than corresponding *jatrophae* females and tending to be more heavily suffused.

SUMMER FORM.—Male larger, with the inner as well as the outer row of lunules orange-yellow. Area between the two cell stripes and especially between the discocellular and post-discocellular strongly orange. Red markings below heavier.

HOLOTYPE.—Male, St. Croix, V. I., June 10, 1925 (L. B. Woodruff).

ALLOTYPE.—Female, St. Croix, V. I., February 4, 1925 (F. E. Lutz).

PARATYPES.—Two males, Christiansted, St. Croix, V. I., June 4, 1911. Six males, three females, St. Croix, V. I., March 2, 1925, March, 1926, March 14, 1929, April 6 and 10, 1925, August 17, 1925.

This St. Croix race is transitional from *semifusca* to typical *jatrophae* as found in the Lesser Antilles.